Remarks/Arguments ---- General

Remarks below are numbered to refer to the comments in the Detailed Action of the Office Action:

2. Please disregard the non-compliant amendment filed on December 8, 2005, which did not meet the amendment format required by 37 CFR 1.121. Claims 22, 23, 24, 25 and 31 are canceled as noted above in amendments to claims.

4. The Office Action rejects Claim 21 as being unpatentable under 35 USC 103(a) over JP 03165654 A (Ota) in view of Clapper, US 2002/0080941 A1. Applicant respectfully traverses the rejection of Claim 21 under sections 102 and 103.

In discussion of the nature of what is disclosed in the following patents, please keep in mind that this Application provides the definition and function of full disclosure in paragraph 0007 of the specification. Such disclosure requires the display of a rendering of all machine readable data such that a human may read, by use of the naked and unaided eye or hand, and fully reproduce, on a device such as a standard QWERTY keyboard, all of the machine readable data.

The machine readable data on magnetic stripe, optical and magnetic encoding, utilized in various exemplary embodiments in the Application, include data such as is described in documents provided in the Information Disclosure Statement by Applicant (IDS) mailed on 3/6/2002. Copies of portions of materials included in that IDS are attached for your convenience. A discussion of these items is in paragraph 0014 of the specification.

Magnetic encoding of data for financial transaction cards, according to ANSI & ISO/IEC Standards and cited in paragraph 0040 of the specification, includes data that acts as a "Start Sentinel", "Field Separator", "End Sentinel", "Format Code", "Longitudinal Redundancy Check Character", among other data available for hardware control purposes. Cited in IDS as "ID TECH'S Guide to Magnetic Encoding on Cards."

Magnetic Ink Character Recognition (MICR), an example of which is on personal checks, includes symbols which act as control codes, and in the E*13B Character set are data that acts as a "dash symbol", an "amount symbol", an "On*Us symbol" and a "transit symbol". Cited in IDS as "a brief introduction to micr technology."

Bar codes contain at the beginning of the code a "Start" symbol, and at the end of the code a "Stop" symbol, which are control codes for the reader, such as can be seen for both continuous and discrete bar codes. In the illustrations attached it can be seen that though other data on bar codes is rendered into human readables, the "start" and "stop" codes are not rendered into such readables. Cited in IDS as "Bar Code Mechanics."

It can be seen from the above three examples that machine readable data requires control codes to allow execution of the machine readable data by the reading device. However, neither Ota nor Clapper teach the full disclosure of those control codes. Therefore, neither Ota nor Clapper teach full disclosure of all machine readable data in their inventions.

The Examiner kindly provided a copy of Ota in Japanese, where only the abstract was in English. Attached is a machine translation of Ota, so that his invention can be more fully discussed. Card 5 is not shown to have any human readable information other than an object to indicate that use of the card 5 would send a message showing the emergency is a fire or a thief invasion. There is no discussion of control codes and Ota does not teach the full disclosure of control codes on card 5. The nature of the number shown on 5, in Fig. 1, is not explained in the text as being a human readable telephone number. The text only notes that the telephone number is memorized in data that is read by reader 4: "If a card 5 is inserted in a card reader 4, the other party's (for example, fire department) telephone number memorized by the card 5 will be read, and < step 5T3 and message data will also be read (Step 4)." It is not clear that Ota "provides stored telephone number data in printed form upon each card storage medium 5", as is asserted in the 1/11/06 communication.

Clapper teaches that a fixed message "may be printed on the face of the card" or that "some or all of the predefined messages may be printed on the card." (Clapper, para. 36, lines 2 and 7). However, no suggestion is made by Clapper that other items in Fig. 5 (message card 100) to be printed or otherwise disclosed in human readable data. Those other items comprise the message card serial number, the destination specifier, the encoded PIN, and the monetary value. No control codes are to be disclosed in human readable data. Moreover, the portion of machine readable data, or memory (Clapper, para. 34, line 3) denominated as the "destination specifier" and the "message card serial number", which execute the functions on the calling and destination telephones are not disclosed in human readable data. Clapper does not teach disclosure of control codes. Therefore, the data that executes the function of Clapper's apparatus does not comprise machine readable data that is fully disclosed in human readable data.

Both Ota and Clapper teach away from full disclosure of all data. Ota's invention is intended to help those disabled persons unable to effectively communicate the danger they face if required to key enter a telephone number and state the nature of the emergency. (Ota, Detailed Description, para. C). Thus Ota teaches away from providing features that allow key entry of data on a card. To make full disclosure of machine readable data would defeat the security functions for which Clapper's substrate has an encoded PIN. While a disclosure of a plurality of messages and associated destinations may be taught by Ota in light of Clapper, neither teaches the desirability of disclosure of control codes and further data encoded in said substrate.

Claim 21 of this Application requires "additional human readable data, disposed upon or within said substrate, that comprises full disclosure of all said machine readable data upon or within said substrate." In the absence of full disclosure, in human readable data, of the control codes required for executing the functions of machine readable data, neither Ota nor Clapper anticipate Claim 21 nor make Claim 21 obvious.

The combination of Ota's card with Clapper's card is submitted to be improper because neither Ota nor Clapper suggest such a combination, and one skilled in the art would have no reason to make such a combination, for the above reasons. It is well known that in

order for any prior art references themselves to be combined for use in a prior art Sec. 103 rejection, the references themselves (or some other prior art) must suggest that they be combined. E.g., as was stated in In re Sernaker, 217 U.S.P.Q. 1, 6 (C.A.F.C. 1983):

"[P]rior art references in combination do not make an invention obvious unless something in the prior art references suggest the advantage to be derived from combining their teachings."

5. The Office Action rejects Claims 22 - 31 as being unpatentable under 35 USC 103(a) over Ota in view of Clapper, and further in view of Taskett (US 5,923,734). Applicant respectfully traverses the rejection of claim 26 under sections 102 and 103. Claims 22, 23, 24, 25 and 31 are canceled as noted above in amendments to claims.

The embodiment of Taskett's card that bears a barcode or magnetic strip, that holds the authorization code, does not show Taskett teaching full disclosure, in human readable data, of all machine readable data encoded by a barcode or on a magnetic strip. As noted in Applicant's Specification, paragraph 14, it is not the case that in prior art substrates bearing bar codes or magnetic means of controlling communication devices also bear full disclosure, in human readable data, of all machine readable data such as the control codes.

The construction of Taskett's card unit system, seen in Fig. 1 (US 5,923,734), provides security functions for the data that executes the function of the phone card, since the authorization code (Fig. 1, 142) is hidden beneath a "SCRATCH OFF" surface when the card is manufactured per the illustration; or the authorization code is chosen by the cardholder and not disclosed on the face of the card. (In Detailed Description, para. 6). Disclosure of the authorization code to others would defeat the purpose of the SCRATCH-OFF surface clearly identified on Taskett's apparatus, and would allow misappropriation of calling credits. With the disguise of a portion of the data used to execute the use of the card, it cannot be said that all instructions are disclosed to all persons viewing or using the card.

For those reasons is can be seen that Taskett teaches away from the suggested combination, and even if combined any full disclosure of the authorization code in human readable data, when manufactured, along with instructions on a phone card would make inoperative the security functions of the two references, and so the combination is not desirable or obvious.

Claim 26 does specify the placement of directions for use on the substrate. However, unlike Taskett, no portions of those instructions are at any time concealed from any persons.

New and Unexpected Results from Full Disclosure of All Data Including Command Codes

Moreover, due to the claimed distinction of full disclosure of all machine readable data, including command codes, new and unexpected results follow from those directions for use. A third person, or the card holder, can enter all data upon a telephone keypad or PC keyboard and thereby execute the function of the card even without the use of a card reader. Execution of the functions of Taskett's invention requires audio prompts that the consumers must respond to --- such as in claim 5(b), claim 7, claim 15, and at Fig. 1, lines 2 through 4. Unlike Taskett, entry of the fully disclosed machine readable data of this invention on a telephone keypad would not require response to prompts by the card user. No prompts would be needed because the control code and other data disclosed in human readable text would provide that information without a need for prompts and responses by the user. This would ease the entry of data, especially for a third person other than the cardholder.

The combination of Ota's card with Clapper's card and Taskett's card is submitted to be improper because neither Ota nor Clapper nor Taskett suggest such a combination, and one skilled in the art would have no reason to make such a combination, for the above reasons. It is well known that in order for any prior art references themselves to be combined for use in a prior art Sec. 103 rejection, the references themselves (or some

other prior art) must suggest that they be combined. E.g., as was stated in In re Sernaker, 217 U.S.P.Q. 1, 6 (C.A.F.C. 1983):

"[P]rior art references in combination do not make an invention obvious unless something in the prior art references suggest the advantage to be derived from combining their teachings."

6. Conclusion

For all the reasons given above, Applicant respectfully submits that:

- Claim 21 defines over prior art under Sec. 102 as the apparatus claimed at least bears upon it a full disclosure, in human readable data, of **all** machine readable data therein or thereupon, including all control codes, and that said machine readable data serves to execute transmission of said data;
- Claim 26 also defines over prior art under Sec. 102 as the apparatus claimed at least bears upon it a full disclosure, in human readable data, of **all** machine readable data therein or thereupon, including all control codes, and that said machine readable data serves to execute transmission of said data. Directions for use of the fully disclosed data also differ from Taskett in that there is no disguise of portions of data that are the subject of said instructions;
- And the claimed distinctions of this Application are of patentable merit under Sec. 103 because of the unexpected results provided, said results comprising the simple step of entering upon a telecommunication device machine readable data that alone suffices to transmit at least a portion of said data to a destination specified in the machine readable data in the apparatus. The telecommunication device used may be a telephone keypad or computer keyboard, because all codes including control codes are revealed, and thus is a new and unobvious method of transmitting a message to a recipient, allowing multiple persons to make as easy use of said apparatus as the person to whom it was assigned even if no machine card reader is available. See Specification paragraphs 28, 50 and 53. Entry of the fully disclosed machine

readable data of this invention on a telephone keypad would not require response to prompts by the card user. No prompts would be needed because the control code and other data disclosed in human readable text would provide that information without a need for prompts and responses by the user. Ota's and Clapper's inventions could not be used to execute this feature, through use of a keypad or keyboard, due to lack of full disclosure of all machine readable data including control codes. Contrary to all current trends the full disclosure of machine readable data on the invention as manufactured would function to remove any encryption or disguise of said data.

Accordingly, Applicant submits this application is now in full condition for allowance, which action Applicant respectfully solicits.

Conditional Request for Constructive Assistance

If the Examiner agrees but does not feel that the present claims are technically adequate, Applicant respectfully requests that the Examiner write acceptable claims pursuant to MPEP 707.07(j). If the Examiner does not agree that this application is in full condition for allowance, Applicant respectfully solicits any suggestions from the Examiner which will place this Application in condition for acceptance.

Finally, this Applicant respectfully requests that, if the Examiner believes that Applicant did not clearly address the reasons for the rejections in the First Office Action, a telephone interview be arranged so that failure to address any issues can be resolved. Applicant respectfully requests that the Examiner contact the Applicant at the below telephone numbers in the event Examiner believes such an interview would help further allowance of this application.

Very respectfully,

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3404 25th Street
Rock Island, IL 61201
309-794-6570
Cell: 309-235-9616

Machine Translation Output

*Note1. This document has been translated by computer. " **** " or " --- " show the words which cannot be translated.*

Note 2: It should be understood that the quality of machine translation is far below that of a human translation. While machine translation output can let you know what is being described in a patent application, it can rarely tell you what is being said. It is unwise to make any significant decision basing on machine translation output without discussing it with your professional translators.

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[Attorney][Name]Shigenobu Nakamura

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(57)[Abstract]
Since this Official Gazette is based on the data submitted before electronic application, abstract is not recorded.

[What is claimed is:]

(1) The telephone system which is characterized by sending out automatically the above-mentioned message and dispatch specification information to the predetermined other party if the card reader is formed in telephone and a card reader is equipped with the above-mentioned card type storage medium while memorizing the message in an emergency to the card type storage medium with dispatch specification information.

[Detailed Description of the Invention]

(a) Field of the Invention

This invention relates to the telephone system for the emergencies of the telephone use equipped with the card and the card reader.

(b) The conventional technology

Generally, usually No. 119, No. 110, etc. are called for a fire department, a hospital, the police, etc. in emergencies at the time of thief invasion etc., using a telephone in that a fire and an emergency case occur たり.

(c) Man tends to become mentally unstable situations, such as fright of a feeling, in an emergency of outbreaks, such as a fire described on Object of the Invention.

Therefore, like before, even when [of No. 119 and No. 110] you carry out direct dialing, there was a problem that correspondence might be overdue and, in mentally and physically disabled persons, such as a deaf-mute, a bedridden elderly, etc., a dial should make well that connection is quick, can be certainly impossible easily, and forgets the notice of a place etc. in an emergency -- there was a problem of ず and connection having been overdue too and sometimes bringing an unhappy result

This invention aims at offering the telephone system which was made paying attention to the above-mentioned problem, and can tell information certainly in あつて and an emergency.

(d) The means for solving a subject and the telephone system of invention of 作用こ form the card reader in telephone, and if a card reader is equipped with the above-mentioned card type storage medium, he is trying to send out automatically the above-mentioned message and dispatch specification information to the predetermined other party while memorizing the message in an emergency to the card type storage medium with dispatch specification information.

By this telephone system, the message memorized by the card type storage medium and dispatch specification information, for example, the address, and a name are automatically sent to the predetermined other party, for example, a fire department, only by equipping a card reader with the card type storage medium for No. 119 in an emergency for example, at the time of the outbreak of a fire.

Therefore, any conversation cannot be exchanged, either but と can also tell required information certainly a long time ago to connect.

(e) Embodiment

Hereafter, an embodiment explains this invention still in detail.

Fig. 1 is an appearance perspective diagram of the telephone used for the one embodiment telephone system of this invention.

Although telephone a handset 2 and ジンシユ button 3 grade usual is equipped with this telephone 1, it contains the card reader 4 in others.

Moreover, two or more cards 5 for making memory information read are attached to the card

reader 4.

As a card 5, as an object for the connection in an emergency, various things, such as an object for fires, an object for emergency case generating, and an object for thief invasion, are prepared beforehand, and are stored in the card receipt box 6.

Their address, the name, the route to a house, and a partner's telephone number (No. 119) other than the case for fires, for example, the message "it is a fire", are memorized by the card 5.

Although, as for the telephone number of a message and the other party, other cards differ, data of the same kind is memorized.

If it has the card reader 4 and the voice synthesis machine 12 with the same function as usual other than the telephone part 11 and a card reader 4 is equipped with one of the cards 5 as electronic circuit composition, as shown in Fig. 2

Intermediary いる [as] which the memory information on a card 5 is therefore read to a card reader 4, and the data and message are changed into a sound with the voice synthesis vessel 12, and is sent out to the other party from a circuit 13 through the telephone part 11.

In addition, as a card 5, an integrated circuit card, an optical card, a magnetic card, etc. may use any.

Next, with reference to the flow figure showing in Fig. 3, operation of the embodiment telephone system in an emergency is explained.

If state of emergency, for example, a fire, occurs, in order to tell that fact, from the cart ' receipt box 6, the person who got to know the outbreak of a fire chooses the specific card 5, i.e., the card for fire information, and inserts < step 5TI and this card 5 in the card reader 4 of telephone 1 (Step 5T 2).

If a card 5 is inserted in a card reader 4, the other party's (for example, fire department) telephone number memorized by the card 5 will be read, and < step 5T3 and message data will also be read (Step 4).

And if auto dialing is carried out to the telephone call place of the read telephone number and it is connected with < step 5T5 and the other party, it synthesizes voice from a message and sends out to the other party (Step 5T 6).

After the message to a telephone call place is completed (Step 5T 7), a card 5 is picked out from a card reader 4, and it stores in the card receipt box 6.

As for the back, the auto call of the other party is carried out by the above processing only by an information person only equipping a card reader 4 with a card 5, and the route to required information, for example, a message, the address, a name, and a house etc. is certainly reported by it.

(f) The effect of invention

According to this invention, certain moreover, necessary information can be speedily connected only by equipping with a card the telephone which has a card reader.

Moreover, the information needed by the simple act of card insertion can be certainly told also by inconvenient persons of a language function, such as a deaf-mute.

[Brief Description of the Drawings]

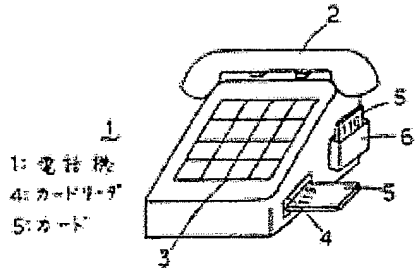
The block diagram in which Fig.'s 1 showing the appearance perspective diagram of the telephone of the one embodiment telephone system of this invention, and showing [2] the circuit composition of this system, and Fig. 3 are flow figures for explaining operation of this system.

1: Telephone,

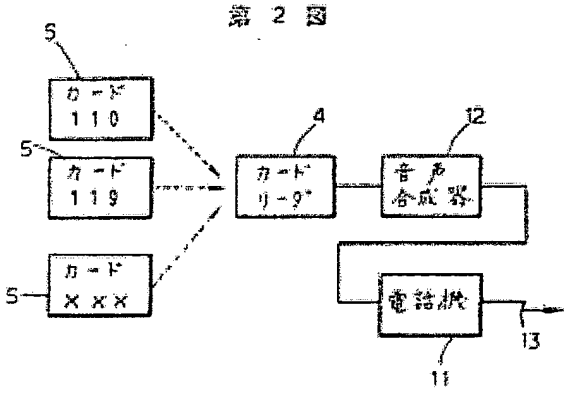
4: Card reader,

5: Card.

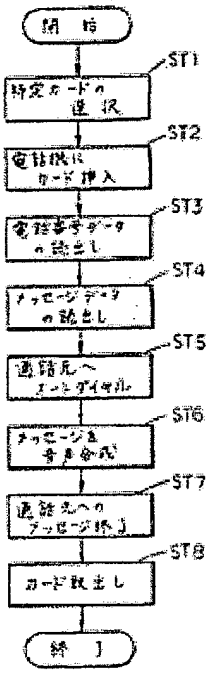
第 1 図



第 2 図



第 3 図



www.idt-net.com/magnetic/index.cfm Jan. 22, 2002

ID TECH's

Guide to Magnetic Encoding on Cards

According to ANSI & ISO/IEC Standards

The purpose of this guide is to give an overview of the magnetic encoding characteristics as defined by ANSI and ISO/IEC standards.

I. Magnetic Stripe Card Physical Configuration as Specified by ISO Standards: 7811-1 through 6, 7812, 7813, and 4909.

I.1 Magnetic Stripe Card Dimensional Characteristics

Click to enlarge... 1 Illustrations attached 1

I.2 Location of Encoded Data Tracks

Click to enlarge... 2

I.3 Standard Definition of Magnetic Tracks

The magnetic track assignments were made for specific industry uses, such as financial, thrift etc. and comprise the vast majority of cards in use, but not all. Other applications such as access control, identification, and driver s licenses have developed their own custom formats for each track. This capability to reformat the content of each track has allowed magnetic stripe card technology to expand into many industries. The three magnetic tracks, defined for financial industry applications, have been assigned names and numbers as listed below:

Track 1: Developed by the International Air Transportation Association (IATA), track 1 contains alphanumeric information for automation of airline ticketing or other transactions where a reservation database is accessed.
Track 2: Developed by the American Bankers Association (ABA), track 2 contains numeric information for the automation of financial transactions. This track of information is also used by most systems that require an identification number and a minimum of other control information.
Track 3: Developed by the Thrift Industry, track 3

immediately before the first data character and indicates the beginning of data.
Parity - A self-checking code using binary digits in which the total number of ones (or zeros) in each track is always even or always odd. A check for even or odd parity detects errors in the system.
Longitudinal Redundancy Check Character- A bit pattern which is encoded immediately after the End Sentinel. Checks for bit errors in the message, which includes the Start Sentinel, End Sentinel, data, and field separators.

II.2 Track 1 (IATA)

Recording density (bits per inch) = 210 bpi
Character configuration (including parity bit) = 7 bits per character
Information content (max.) = 79 alphanumeric char.

Track 1 data reads:
<SS><FC><PAN><FS><CC><NAME><FS><Additional Data><CC><LRC>
where SS = Start Sentinel = %
FS = Field Separator = {
ES = End Sentinel = ?
FC = Format Code
LRC = Longitudinal Redundancy Check Character
CC = Country Code (3 characters minimum)
PAN = Primary Account Number (19 digits maximum)
NAME = 26 Alphanumeric Characters Minimum
Additional Data = *Expiration Data = 4
Interchange Designator = 1
Service Code = 2
Discretionary Data
*required by Visa and MasterCard
a. Track 1 is limited to 79 characters including Start Sentinel, End Sentinel and LRC.
b. MasterCard PAN varies up to 16 characters maximum.
c. Visa is 13 or 16 characters, including mod 10 check digit.
d. Italicized text identifies control characters.

Track 1 Coded Character Set:

Click to enlarge... 3

a. These characters are available for hardware control purposes only and cannot contain information characters.

b. These characters are reserved for additional national characters when required. They are not to be used internationally.

c. These characters are reserved for optional additional graphic symbols.

d. These characters shall have the following meaning for this

a brief introduction to micr technology

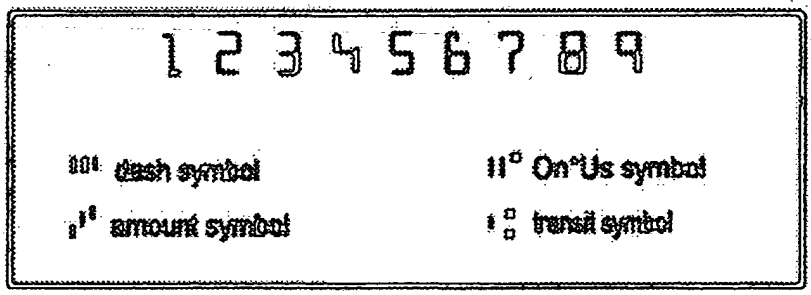
By current estimates, check fraud costs retailers, corporations and banks more than $10 billion annually. As check volume continues to increase, a proliferation of personal computers and high quality copiers/printers have made it easier and less expensive to forge checks.

Originally designed to automate the check handling process, MICR technology, alone or in conjunction with a check authorization service, is now recognized as an effective deterrent to check fraud, and the use of MICR check readers at the point of sale (POS) has grown dramatically in recent years. This document is designed to introduce this very effective technology to potential new users. Written in non-technical language, it covers the basics of MICR technology for both retail POS and banking applications.

What is MICR?

MICR, or Magnetic Ink Character Recognition, is a process in which magnetic ink and special fonts are used to create machine readable information on documents. The most common application for MICR is automated check processing. In 1996, more than 60 billion checks and related financial documents were processed using MICR technology.

The E-13B Character Set



MICR technology was developed in the 1950s to address the growing volume of checks being used in the United States. The American Banking Association (ABA), in cooperation with Stanford University, developed a set of fourteen unique characters called the E-13B MICR Font, which was accepted as the standard by the ABA in 1959. The American National Standards Institute (ANSI) followed suit in 1963, adopting E-13B as the American standard for MICR printing. Several other countries including Canada, Japan, Australia, Columbia, Venezuela and the United Kingdom have adopted E-13B as well. A second magnetic font, CMC-7 is used in Brazil, France, and a number of other European countries.

while others do just the opposite. There may be "dashes" and spaces as well. This field is flexible because only the "On Us" bank needs to process the item based on this information.

- Amount: The Amount field contains the face amount of the check in MICR font. Encoding is done by the"bank of first deposit," the payee retailer, or the payee company prior to deposit. This field is 10 characters, right justified and zero filled.
- Control Codes: All the fields listed above are delimited by special E-13B symbols. The Transit field begins and ends with a transit symbol; the "On Us" field may (or may not) begin with an "On Us" symbol and may (or may not) end with one. The Amount field always has an amount symbol at each end. There is a dash symbol that may (or may not) be embedded in the account number.

MICR Technology in Retail Applications

Retailers are faced with accepting checks as a form of tender, and processing them in a quick and efficient manner that does not offend the customer or delay the transaction. Capturing MICR information at the point of sale and passing it to an authorization service (or subsystem) dramatically reduces both the risk and the time required for a "check tender." A check reader is able to "parse" the information in the above mentioned fields, and format it according to the exact requirements of the authorization provider. Authorization is typically accomplished by comparing the data to a positive or negative database (or both) to determine whether the customer is known to the retailer, and whether the account has been closed or overdrawn in the past. This gives the retailer greater control over the check tendering process, and reduces the probability of accepting a bad check.

Retail operators can also benefit from a growing trend to integrate additional auto ID technologies such as magnetic stripe reading (MSR) into the MICR reader. Welch Allyn's ST8300, for example, has an integrated triple-track MSR as well as two auxiliary RS-232 ports for additional peripherals (e.g., bar code scanner, signature capture pad, or PIN pad). This allows the ST8300 to act as the base unit in a suite of products designed to provide single point connectivity for multiple inputs at the point of sale. As a result, retailers can now gain the benefit of multiple technologies without using multiple I/O ports on the POS terminal.

MICR Technology in Banking Applications

Up to 85% of the paper checks received for deposit in retail banks come through the teller window in transactions of five items or less. As more banks switch from batch oriented teller systems to online posting in a "teller automation" environment, there is an opportunity to reduce costs and enhance customer service by adding MICR check readers at the teller window.

The on line posting environment requires entry of the customer account number at the point of transaction (in this case the teller window). Historically, this has been accomplished by the teller via the terminal keyboard. Several studies have shown that, on average, one keyboard error is made for every 30 characters typed. Given an average 10-digit account number, that means that 25% of all transactions contain at least one error. A check reader used at the teller window would allow the account number to be read from the deposit slip, saving time and increasing the accuracy of the data. Further, as the items in the deposit are read by the check reader, the teller can enter the amount of each check, and balance the transaction in real time. "On Us" items (those that are drawn on the bank) are posted to the customer's account immediately which

SNX The Bar Code Professionals

Bar Code Mechanics

What is Bar Code?

Bar code is a pattern of bars and spaces which represent numbers, letters or characters.

Code 39, for instance, has a unique pattern. Code 3 of 9, as it is sometimes called, derives its name from the way in which the pattern is created. Each character has nine elements (five bars and four spaces) and three of them are fat.

Why Use Bar Code?

Bar codes are accurate. They eliminate manual data entry errors. Research has shown that the error rate due to bar code misreads is less than one thousandth of one percent. Tests have shown that bar coded information had a throughput accuracy rate of 1 error in 10,000,000 characters. Compare that to keyboard entry error rates of 1 error in 100 characters.

Bar codes speed data entry. Even with a simple wand, a bar code can be scanned in a fraction of the time it takes to enter the information manually. CCD and laser scanners are also available for even faster data entry.

Bar codes can be produced easily and cheaply. Bar codes can be printed on most computer printers, for the cost of ink and paper. Even a low cost dot matrix printer can produce bar codes of adequate quality.

How Does a Scanner Work?

Scanners are the devices that read bar codes. A scanner shoots pulses of light. If it falls on a light area, a zero (0) is read. If it falls on a dark area, it reads a one (1). Scanning the bar code generates a string of zeros and ones. This pattern of zeros and ones represents the characters encoded. The scanner software, or firmware, translates or decodes the strings into characters.

The scanner must be able to shoot a straight line across the bars and spaces. The taller the bars the greater the angle and the greater the chances of getting a good reading.

The shorter the bars the less likely the scanner will be able to shoot a straight line through the bars and spaces.

What Does the Bar Code Represent?

No matter which bar code is used, the information encoded in the bars and spaces may be displayed

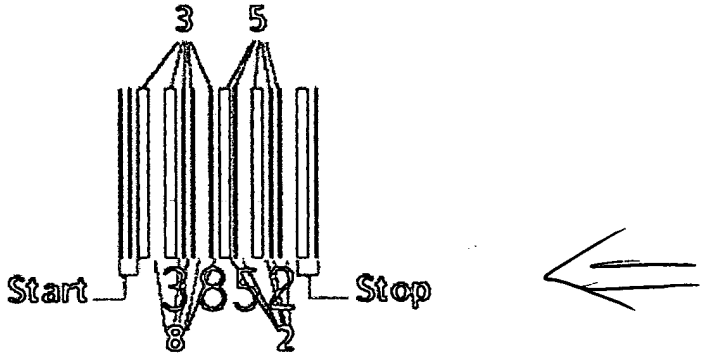
The quiet zone is the clear area (free from marks) before and after the bars and spaces. Having a quiet zone is as important to readability as the bars and spaces! Scanners need to establish values for the quiet zone before they can evaluate the bars and spaces. Reading the color and reflectance of the quiet zone establishes how the spaces will read and determines the difference between the spaces and the bars. Bar code cannot be read without a quiet zone.

Bar Code Pro will generate at least the minimum required quiet zone for each particular code. Even though the quiet zone actually surrounds the code (the Bar/Space image), the clear area above and the below the Bar/Space image is not required for readability of most symbologies.

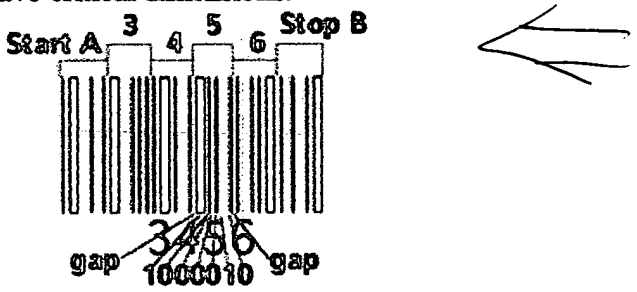
Discrete vs. Continuous bar code

Discrete symbologies consist of unique bar and space patterns for each character. Continuous codes cannot be separated into individual characters.

ITF is a continuous bar code. You cannot pull it apart into discrete, individual characters. Notice how the bars of the 3 and 5 are embedded in the bars of the 8 and 2.



Codabar is a discrete bar code. You can pull apart characters into discrete, individual units. The spaces between characters do not have critical dimensions.



The pattern of the number five is 310000102 where å11 is a wide bar or space and å01 is a narrow bar or space.

What is a Check Digit?

A check digit is used to check that the data is read correctly. Different symbologies apply different formulas to the encoded numbers to yield a single digit. That digit is the check digit. That check digit is usually added to the end of the already encoded numbers.

The computer checks that the numbers were read correctly by comparing the check digit it calculates against the check digit it read.

For example: When encoding the ZIP code 311215-12352 into POSTNET, the check digit is the total of the numbers subtracted from the next higher multiple of ten.

1 + 1 + 2 + 1 + 5 + 1 + 2 + 3 + 5 = 21

30 is the next higher multiple of ten

30 - 21 = 9

the check digit = 9